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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

EDWARD TYGARD

Application No: 10/689,848

Art Unit: 3652

Filing Date: October 22, 2003

Examiner: J. Keenan

For: CLAMPING APPARATUS

DECLARATION UNDER 37 CFR 1.132

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

My name is Edward Tygard. I am the inventor of the invention claimed in the patent application identified above. I am also the president of Tygard Machine and Manufacturing Company, which is the assignee of this patent application.

My company has been manufacturing clamping apparatuses for lifting one or more layers of goods from a pallet since around 1994. In the product handling industry, such apparatuses are frequently referred to as "layer pickers" because they can "pick" or lift an entire layer of objects at a time.

In the clamping apparatuses which we manufacture, four arms are pivotably mounted on a horizontal frame. A pad which can grip the side of a load is mounted on the lower end of each arm. Each arm can be swung about a horizontal axis by a hydraulic cylinder in order to move the pad into and out of contact with a load. When the pads on all four arms are firmly pressed against the sides of a load, the entire clamping apparatus can be lifted in order to lift the load. Our clamping apparatuses are very useful in warehouses for moving layers of objects from one pallet to another.

Since I first developed a clamping apparatus, our clamping apparatuses have been very well accepted and widely used by soft drink distributors (particularly by distributors of Coca Cola products), but until I invented the clamping apparatus described in this application, our clamping apparatuses gained zero acceptance in the beer and grocery industries, which represent huge markets. The reason for this lack of acceptance was as follows.

In the first clamping apparatus which I developed, the pads for gripping a load were welded to the pivotable arms. This meant that as the arms pivoted in and out, the angle of the pads with respect to the vertical varied at the same rate that the angle of the arms varied. If an arm swung on the frame by 10 degrees, then the angle with respect to the vertical of the pad on that arm also changed by 10 degrees.

I have found that ideally, each pad is nearly parallel to (which includes being at a very small angle to) the side of a load when the clamping apparatus is grasping the load. Since the sides of a load are usually vertical, this means that the pads are ideally close to vertical when

contacting a load. If a pad is at a significant angle to the side of a load, the pad can pinch the load and produce various kinds of damage, such as indentations, slits, or tears. Therefore, in a clamping apparatus in which the pads are welded to the arms, in order to maintain the pads close to vertical when contacting the sides of a load, the angle of the arms must be maintained within a very narrow range. This means that the dimensions of a load that the clamping apparatus can handle while maintaining the pads vertical are very restricted. Basically, a single clamping apparatus of that type can handle only a single size of load while maintaining the angle of the pads close to the vertical.

To a certain extent, the problem encountered with fixed pads can be overcome by mounting the pads on the bottoms of the arms so that the pads can freely pivot on the arms. An example of a clamping apparatus which I developed having pads which are freely pivotable on the arms of the clamping apparatus is described in my earlier United States Patent No. 5,516,255. With such a structure, when the pivotable pads contact the sides of a load, the pads pivot on the arms until the pads rest flat against the sides of the load. Theoretically this structure should enable a clamping apparatus to handle any load within the span of the arms without damaging the load.

However, a problem with such a structure is that the operator of the clamping apparatus has to exercise considerable care when placing the pads against the side of a load. I found that if the region of contact between a pad and the side of a load is too far from the axis of pivoting of the pad, the pad can pivot away from the vertical under the moment applied to it by the load and can drop the load or fail to pick up the load. This problem is especially severe when the load has a small height, such as when the load is a single layer of goods being picked off a pallet. It is

possible to install stops on an arm to prevent a pad on the arm from pivoting far enough to drop a load, but the presence of stops limits the ability of the pad to pivot with respect to the arm so as to achieve an upright position, so it limits the ability of the clamping apparatus to grasp a wide range of loads while maintaining the pads close to vertical.

In the soft drink industry, the loads handled in any given warehouse tend to have a fairly narrow range of dimensions. For example, in a warehouse for Coca Cola products, almost all of the pallets have uniform dimensions of 38 x 38 inches, and the layers of soft drinks stacked on such pallets will also have uniform dimensions of approximately 38 x 38 inches. Therefore, a single clamping apparatus can be built which can handle all the loads in a warehouse for Coca Cola products while keeping the pads fairly close to vertical when contacting each load. While pinching of loads was still somewhat of a problem with our previous clamping apparatuses, it was of a level that soft drink distributors could live with. As a result, soft drink distributors have made extensive use of our clamping apparatuses since 1994.

However, in the beer and grocery industries, a single warehouse typically handles a variety of different products, and different products are shipped on pallets having dimensions which can differ significantly from one product to the next. Therefore, the dimensions of layers stacked on these pallets will also vary from one product to the next. For example, a pallet for Coors beer measures 38 x 48 inches, a pallet for Miller or Budweiser beer measures 32 x 38 inches, and a pallet for Molson beer measures 38 x 45 inches. When a single warehouse distributes different makes of beer, a single clamping apparatus of our old design could not effectively handle all the different load sizes while maintaining the pads of the clamping apparatus vertical for each load size. The problem was even worse in the grocery industry, since

grocery distributors deal with an even wider range of pallet sizes than do beer distributors. Given the cost of a single clamping apparatus, a distributor is not willing to buy a separate clamping apparatus for each load size.

As a result, prior to this invention, there was no clamping apparatus in existence which was acceptable to either the beer or grocery industries. From 1994 through 2002, my company made numerous attempts to sell our existing clamping apparatuses to beer and grocery distributors through all different approaches, including direct mailings, advertisements, sales calls, and demonstrations of our product. However, there was no interest in either of these important industries, despite the fact that by the end of 2002, we had already sold over 230 clamping apparatus to distributors of soft drinks, such as Coca Cola distributors.

Another approach that has been tried in order to keep the pads of a clamping apparatus parallel to the sides of a load is to equip a clamping apparatus with arms which slide in and out horizontally instead of swinging about an axis. An example of a clamping apparatus of this type is shown in Figures 1 - 3 of this application. As shown in those figures, a clamping apparatus of this type usually has L-shaped arms. The horizontal portion of each arm is supported so as to be able to slide in and out, and the vertical portion of the arm has a pad at the bottom for gripping a load.

A big problem with this type of clamping apparatus is that large bending loads act at the elbow portions of the L-shaped arms during use, and the bending loads cause the horizontal and vertical portions to bend like a wish bone. If the bending is sufficiently large, the pads cannot maintain adequate contact with the sides of a load, and the pads drop the load. Also, if the

horizontal portion of an arm bends, the arm cannot slide in and out smoothly to grasp a load. If the arms are made so sturdy that they do not bend when loaded, the clamping apparatus ends up being so heavy that it puts an unreasonable load on a fork lift that the clamping apparatus is mounted on. Such heavy loads cause problems such a bending or damage to the mast of the fork lift.

Another problem with this type of clamping apparatus is that the pistons of the hydraulic cylinders for driving the L-shaped arms in and out must travel by the same distance as the arms themselves travel, and the time required for the pistons to travel this distance makes operation of the clamping apparatus very slow.

As a result, even though such a clamping apparatus has been marketed by other companies, it has not been commercially successful because of such operational problems.

In short, the state of affairs in the product handling industry prior to 2003 was that there had been a long interest, both by my company and by others, in developing a clamping apparatus that could avoid all damage to food and beverage products and was practical to operate, but no one had been able to develop an apparatus that was acceptable to the beer or grocery industries.

Beginning in 2003, my company commercially introduced a new type of clamping apparatus which is described by the claims of this application. Like our previous clamping apparatuses, this new clamping apparatus has pads which are pivotably mounted on pivotable arms, but instead of the pads being free to wobble about on the arms or being rigidly welded to the arms, the angle of the pads with respect to the arms can be controlled so that the pads can

maintain a constant angle with respect to the vertical as the arms pivot. This means that the pads can be maintained parallel to the sides of a load (or at a different desired angle to the load) for any size load that the dimension of the clamping apparatus enable it to grasp. This also means that the clamping apparatus can pick up a wide variety of loads without damaging the loads. Also, because the angle of the pads is controlled (instead of the pads being free to wobble), the problem that was encountered with freely pivotable pads, which is that the pads could rotate under the moment applied by a load and drop the load, does not occur, even with loads having a small height, which were a particular problem with our old design. Therefore, our new clamping apparatus can pick up loads more reliably. In addition, our new clamping apparatus is easier for an operator to use, since he does not need to be so precise about how high on a load he contacts the load with the pads.

We sell our new clamping apparatus under the trademark "Tygard Claw", of which there are currently two different models. One is model no. TC600F, and the other is model no. TC600S. The TC600F is designed to be mounted on the front of a fork lift, and the TC600S is designed to be mounted to the side of a fork lift so that it can grasp items on the side of an aisle while the fork lift is traveling along the aisle.

Both models have had excellent commercial success. The following table shows our sales figures for our clamping apparatuses for 2000 - 2006 in terms of the number of units sold. The "old design" refers to the clamping apparatus which we sold prior to 2003 and which did not have control of the angle of the pads. The "new design" refers to the clamping apparatus which we began selling in 2003 and which is described by the claims of this application and in which the angle of the pads can be controlled as the arms pivot.

SALES OF "TYGARD CLAW" FOR 2000 - 2006

Year	No. of units sold	Type of model	approximate % of units sold to beer or grocery industries
2000	30	old design	0
2001	36	old design	0
2002	38	old design	0
2003	52	new design	23% (12 units)
2004	58	new design	31% (18 units)
2005	64	new design	50% (32 units)
2006	63	new design	50% (32 units)

The figures in the last column for the % of units sold to the beer or grocery industries are approximate because the purchaser of a clamping apparatus is not always the end user, and we cannot be sure who the end user is or how he intends to use the clamping apparatus.

Several points are significant about these sales figures. The first important point is that the sales have significantly and steadily increased since our introduction of the new design in 2003. The second important point is that for the first time, we were able to begin selling our clamping apparatus to the beer and grocery industries and are continually expanding in this field.

Thus far, we have sold our clamping apparatuses to more than 30 different beer distribution facilities and to more than 20 different warehouses for groceries or grocery chains.

Although we have now been accepted by the beer and grocery industries and are steadily expanding in those industries, we did not receive immediate acceptance. In fact, there was a strong prejudice in the beer and grocery industries against the use of any clamping apparatus due to bad experiences in the past. No amount of advertising or discounting would be sufficient to convince these industries to buy our product if it were not providing exceptional results.

One of the most striking illustrations of this lack of immediate acceptance took place several years ago when we were invited to Texas to attend the grand opening ceremony of a distribution facility for a distributor for a major beer company. One of the corporate directors of the beer company, who was also attending the ceremony, toured the facility shortly before the ceremony. The distributor had been very successfully using our new clamping apparatus in their facility for transferring cases of beer between pallets. However, during his tour of the facility, the beer company director noticed some small dents in some of the beer cans on the pallets, and he immediately ordered that our clamping apparatus not be used in the distribution facility. This was a major and immediate problem for the distributor, since each of our clamping apparatuses can handle several thousand cases of beer per hour, and the only alternative to using our clamping apparatus is to get a large number of laborers to load and unload cases of beer from pallets by hand. There was no evidence that our clamping apparatus was at fault, but the beer company director, exhibiting a bias that was prevalent in the beer industry, felt that no clamping apparatus in existence could possibly handle cases of beer without damaging them. It was only after much effort that we were able to convince the beer company director that our clamping apparatus had nothing to do with the dents (the dents were actually caused by the manufacturer of the beer cans), and happily, that beer company is now one of our major customers. To my mind,

it is clear that the beer and grocery industries did not regard my clamping apparatus as an obvious invention, since otherwise there would not have been such initial resistance to its use.

In the soft drink industry, our earlier clamping apparatuses had been widely accepted, and had in fact come to be considered essential tools by many soft drink distributors on account of the huge decrease in labor costs which our clamping apparatuses enable. However, pinching of merchandise by the clamping apparatus was still sometimes a problem, and there was a long-felt need in the soft drink industry for an improved clamping apparatus which could do away with the problem of pinching. Evidence of this long-felt need and how our new clamping apparatus satisfied this need is shown by the attached letter from Tom Seifert, who is the Manager of Warehousing Strategy for Coca-Cola Enterprises Inc.

Our advertising for this product is very modest. We have a very simple web site at www.tygardclaw.com. We run an advertisement in a trade journal (such as "Beverage Industry") about once every 3 months, and we send out around 50 postcards to prospective customers each month. At present, we have no dedicated salesmen, and all marketing is handled by myself and my son Kip on a part-time basis on top of all our other duties. Basically, I believe that almost all of our sales of our products are the result of word of mouth by satisfied customers and not due to advertising on our part.

Including myself, my company has only 8 full-time and part-time employees. Our closest competitor, which is the largest maker of clamping devices in the world, has over 1900 full-time employees. Nevertheless, we estimate that we have over 80% of the market for clamping apparatuses used in the soft drink industry. Our front-mounted model currently has a list price of

\$20,500, and our side-mounted model has a list price of \$27,500. Our closest competitor sells a front-mounted model for around \$15,000, and they sell a model which can swing from one side of a fork lift to the other for around \$37,000. (Our side-mounted model can reach to only one side of a fork lift at a time, so it has a smaller range of reach than the competitor's swinging model). In spite of our competitor selling a front-mounted model which is significantly cheaper than ours, and despite the fact that their swinging model has a wider range of movement than our side-mounted model, our market share is far greater.

My company has been selling clamping apparatuses since around 1994, and we have long had a strong interest in expanding use of this clamping apparatus into the beer and grocery industries. Despite the strong potential market for this product and awareness of this potential in the trade, those skilled in the art were not able to develop a clamping apparatus which was acceptable to those industries. I believe that the clamping apparatus described by this application is the first one that has successfully met the stringent requirements of those industries.

In my opinion, the significant commercial success which we have achieved with our new product, particularly in those industries which were previously unwilling to accept use of a clamping apparatus, is strong evidence of its nonobviousness.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any

patent issued thereon.

Respectfully submitted,



Edward Tygard
President,
Tygard Machine & Manufacturing Company
Washington, Pennsylvania

Date: 3-27-07

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Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Re: U.S. Patent Application No. 10/689,848
Filed on October 22, 2003
CLAMPING APPARATUS

Dear Sir:

My name is Tom Seifert, and I am the Manager of Warehousing Strategy for Coca-Cola Enterprises Inc., which is the largest bottler and distributor of products of The Coca-Cola Company. My primary responsibilities are process improvement and innovation strategy development for efficient material handling in our 330 warehouses across North America.

Coca-Cola Enterprises Inc. has had a business relationship with Ed Tygard extending for more than 10 years. In this relationship, Mr. Tygard has helped develop technological solutions for various material handling issues in our warehouses. We make extensive use of the clamping device developed by Mr. Tygard because it provides a significant reduction in material handling labor costs. We have approximately 120 of these devices in over 100 of our warehouses today.

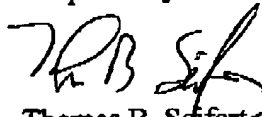
Currently, Coca-Cola products are commonly packaged in aluminum cans. Unlike the thick-walled cans of the past, the cans being used today have a thickness of .0038 inches. Such cans can be easily damaged by external forces. A long standing problem of clamping devices for handling cases of soft drinks has been the angle at which the pads of the clamp press against the sides of the cartons. The pads have a tendency to pinch the cartons if the angle is not right, increasing the potential for denting and even possibly rupturing the cans. This problem has become increasingly serious as the raw material suppliers continue to decrease the wall thickness in an effort to reduce material costs.

In 2003, Ed Tygard showed me a newly designed clamping device that he had developed. This new clamp has a gripping pad which can maintain a constant angle to the side wall of the carton, regardless of the dimensions of the carton; as the arm pivots when pressure is applied. We tested this new clamping design in a warehouse, and found it to be a significant improvement on existing clamps that I was aware of. Specifically, it greatly reduced the problem of pinching that resulted in product damage. Another benefit of the new clamp design is that the angle of the pad can be adjusted if necessary. No other clamping device that I am aware of has solved the problem of pinching the way the one developed by Mr. Tygard has.

Since it was first tested, Coca-Cola Enterprises Inc. has installed the new clamping device in over 50 of our 330 warehouses in North America, which accounts for approximately 50% of the warehouses in which we have a clamping device. This new design is used exclusively in all new installations, and when replacing older clamping devices currently in use.

From my standpoint, this has been an outstanding new design that has enabled us to significantly reduce product damage due to pinching, a problem that has plagued our industry since clamping devices were first put into use over 12 years ago.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'T B Seifert', written over the printed name.

Thomas B. Seifert
Cincinnati, OH
November 1, 2006